WASHINGTON STATE DEPARTMENT OF ECOLOGY

Focus on **Recycled Paper**

from Ecology's Solid Waste and Financial Assistance Program, Statewide Resources Section

What happens to recycled paper?

In General

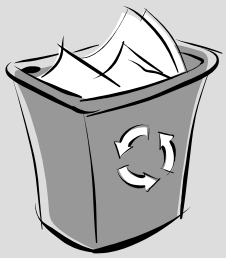
Paper recyclers that collect paper must then bale it up and transport the bales to market. Your recycling center or curbside collection company will sell these bales to a broker or directly to a paper mill. The payment will depend on the quality of the paper in the bales. In many cases, your help in keeping different kinds of paper sorted means the recyclers can get the best price, and stay in business collecting more paper from you. Residential customers of curbside recycling services, however, can often put all grades of paper into one bin. The curbside collection company will sort the paper before baling.

Generally, a mill re-pulps waste paper by mixing it with water in large tanks and mechanically beating it. Mills then employ pulp-decontaminating procedures, such as magnetism, centrifugal force, and simple screening. These methods remove foreign items such as staples, and additives to the initial paper product such as water-soluble adhesives or clay coatings. Mills also need to remove ink from the recycled pulp, especially from newspaper, and do this by repeated rinsing or flotation processes. Other discoloration is sometimes removed by bleaching the pulp.

Some contaminants are difficult to remove, however. Glass poses a particular problem for paper mills. Magnets will not remove glass, and small pieces of broken glass can go through a mill's screens along with recycled pulp. When these pieces of glass get into the machinery that makes paper, moving metal parts can be severely damaged.

Every time paper is recycled, the wood fibers from which it was made are torn into shorter lengths. Therefore, fibers in recycled paper pulp are generally shorter than fiber in "virgin" pulp made directly from trees. Prior to paper production, mills must rinse out much of the extremely short fiber in recycled pulp. The shorter the fibers that remain, the less strength the paper will have. This fact puts a limit on the number of times paper can be successfully recycled.

There-pulping, de-inking, and bleaching processes all require the use of a lot of water. After its part in the process, this water must itself go through some kind of treatment process before it can re-enter the environment. Waste inks, bleaching agents, even the sludge of fiber fragments must all be removed or neutralized. Many mills filter or treat the wastewater for reuse in the mill. Material removed from this water, however, can still present a solid-waste disposal problem.



About Specific Grades of Paper

Depending on its initial quality and the quality required of its eventual reuse, the paper you recycle may go through differing processes. Used high-grade paper (such as computer printout, copy paper, or stationery) is often recycled into more of the same, or into tissue products. To use it this way, we must keep it separate from other sorts of paper. Once it is pulp, it may have to be de-inked, then perhaps mixed with virgin pulp, and finally bleached in some fashion. In other uses, such as a constituent of lower grade products made of mixed waste paper, bleaching or de-inking may not be required.

February 2005 05-07-011

One fairly simple re-use for mixed waste paper pulp is to mold it into various shapes, such as egg cartons. With additional processing, mills can turn mixed waste paper pulp into paperboard for packaging consumer goods. This paperboard can be unbleached, such as you might find with shoe or cereal boxes (gray inside), or bleached, such as in frozen food boxes (white inside). Often, manufacturers combine the two in a layered paperboard that is folded white-side out in the finished package.

Corrugated cardboard boxes and brown paper grocery bags contain a high-grade paper fiber to give them the strength required for their use. The pulp from these recycled products can be mixed with some virgin pulp to make new bags and boxes of adequate strength, or it can be turned to the same uses as mixed waste paper pulp. In either case, the pulp does not generally need bleaching.

When intended for the production of new newsprint, re-pulped newspapers must be de-inked. The ink removed may contain substances best kept out of the environment, which is an additional task faced in this process.

More and more, printers are using more environmentally friendly inks and paper manufacturers are using less toxic bleaching agents. This is resulting in reduced wastewater treatment problems at mills that recycle paper. As the demand for recycled paper increases, we can expect even more improvements to the recycling process.

For more information

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